LIGHTING
for
HAZARDOUS LOCATIONS
WET OR DAMP LOCATIONS
or
CORROSIVE ATMOSPHERES

WESTINGHOUSE ELECTRIC & MFG. CO.
EDGEWATER PARK CLEVELAND, OHIO

INDUSTRIAL LIGHTING FOR SHELL LOADING, AMMUNITION PLANTS, AND OTHER HAZARDOUS LOCATIONS

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A Hazardous Location is one in which there is possibility of an explosion because the atmosphere may contain combustible material.

The National Fire Protection Association reported after careful investigations that heavy loss of life and property caused by fire and explosions can be prevented in the hazardous industries by taking proper precautions in the installation of electrical equipment. Therefore, they have established rules to be applied in the design and installation of all electrical apparatus in hazardous industries. These regulations may be found in Article 500 of the 1940 National Electric Code and the classification of hazardous locations is given below. However, before attempting to recommend or classify locations as hazardous, the local authority enforcing the code should be consulted.

CLASSIFICATION OF HAZARDOUS LOCATIONS

(From National Electric Code, 1940, Article 500).

Class I (Paragraph 5005 N.E.C.)

"Class I locations are those in which inflammable volatile liquids, highly inflammable gases, mixtures or other highly inflammable substances are manufactured, used, handled, or stored in other than their original containers."

Group A - Atmosphere containing acetylene. Example: Some parts of acetylene manufacturing plant.

Group B - Atmospheres containing hydrogen or gases or vapors of equivalent hazard such as manufactured gas. Example: Artificial gas plants or parts of plants where hydrogen is manufactured or used.

Group C - Atmospheres containing ethyl ether vapor. Example: Hospital operating rooms.

Group D - Atmospheres containing gasolene, petroleum, naptha, alcohols, acetone, lacquer solvent vapors and natural gas.

Example: Some parts of:

1. Dry cleaning plants
2. Pyroxylin Plastic plants
3. Spray-painting
4. Varnish manufacturing
5. Natural gas pumping stations and terminals
6. Distilleries
7. Refineries
8. Rectifying and blending plants producing whiskey and other alcoholic beverages.
9. Industrial alcohol plants.

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Class II (Paragraph 5006 N.E.C.)

"Class II locations are those in which (1) combustible dust is thrown, or is likely to be thrown, into suspension in the air in sufficient quantities to produce explosive mixtures, or (2) those where it is impracticable to prevent such combustible dust from collecting in such quantities on or in motors, luminaires, or other electrical devices that they are likely to become overheated because normal radiation is prevented."

Group E - Atmospheres containing metal dust.

Group F - Atmospheres containing carbon black, coal or coke dust.

Example: Some parts of chemical or coal pulverizing plants.

Group G - Atmospheres containing grain dust.

Example: Some parts of:

1. Flour Mills
2. Grain mills and elevators
3. Starch plants
4. Sugar and cocoa pulverizing.

Class III (Paragraph 5007 N.E.C.)

"Class III locations are those in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured or used, and which are hazardous through such fibers or flyings collecting on or being ignited by arcing contacts, resistors, lamps or similar apparatus."

Example: Some parts of:

1. Cotton and other textile mills
2. Combustible-fiber manufacturing plants
3. Cotton gins
4. Clothing manufacturing plants
5. Cotton seed mills
6. Woodworking mills

Class IV (Paragraph 5008 N.E.C.)

"Class IV locations are those in which easily ignitable combustible fibers are stored or handled (except in rooms where in process of manufacture) and which are hazardous through such fibers being ignited by arcing contacts, resistors, lamps, or similar apparatus."

Examples: Warehouses in which are stored or handled combustible fibers such as:

1. Cotton, (linters or waste)
2. Lisle, istle
3. Hemp, tow, jute
4. Cocoa fiber, oakum, baled waste
5. Spanish moss, excelsior, etc.

WESTINGHOUSE LUMINAIRES APPLICABLE TO HAZARDOUS LOCATIONS

The most common hazardous locations fall in Class I Group D and Class II Group G. Westinghouse has designed and obtained Underwriters' Laboratories, Inc., approval on luminaires for Class II Group G locations for both filament and fluorescent lamps.

The Westinghouse units now available for Class II Group G locations are the FDT-40 for fluorescent lamps and the DT luminaire for filament lamps (see catalog sections attached). The FDT-40 is approved for the use of 2 or 3-40 watt fluorescent lamps. The DT luminaires are approved in two sizes, 100 watt and 150-200 watt.

Type FDT-40 fluorescent units and DT incandescent units are suitable for Class III and IV locations.

At present no Westinghouse fixtures are available for Class I Group D locations.

LIGHTING POWDER AND SHELL LOADING PLANTS

Powder plants, arsenals, and shell loading plants are not listed in the National Electric code under any classification of hazardous locations. However, specific requirements for lighting equipment for these plants have been set up by the Ordnance office of the War Department. These specifications are as follows:

A. Maximum temperature on any exterior surface exposed to dust shall be 109°C (228°F), based on a 27° C (81°F) ambient.

B. Luminaire shall preferably be Underwriters' Laboratory Approved for Class II, Group F or G applications. However, designs not so approved may be acceptable if approved by the Industrial Service, War Department (Underwriters units may be given preference.)

The Ordnance Office of the War Department has authorized us to quote them as follows in regard to these specifications:

1. "No local office whatsoever has any authority to extend the specification requirements beyond those issued by the headquarters Loading & Assembly Section of the Ordnance Office.
2. "The above requirements are the only requirements for Dust-Tight luminaires for ordnance plants.
3. "Possible dust accumulation points will definitely not disqualify a unit. The extremely frequent and complete cleaning schedule in these plants completely eliminates any possible objection from this angle.
4. "There is no approved list of specific manufacturers fixtures".

WESTINGHOUSE DUST-TIGHT LUMINAIRES PER ABOVE SPECIFICATIONS

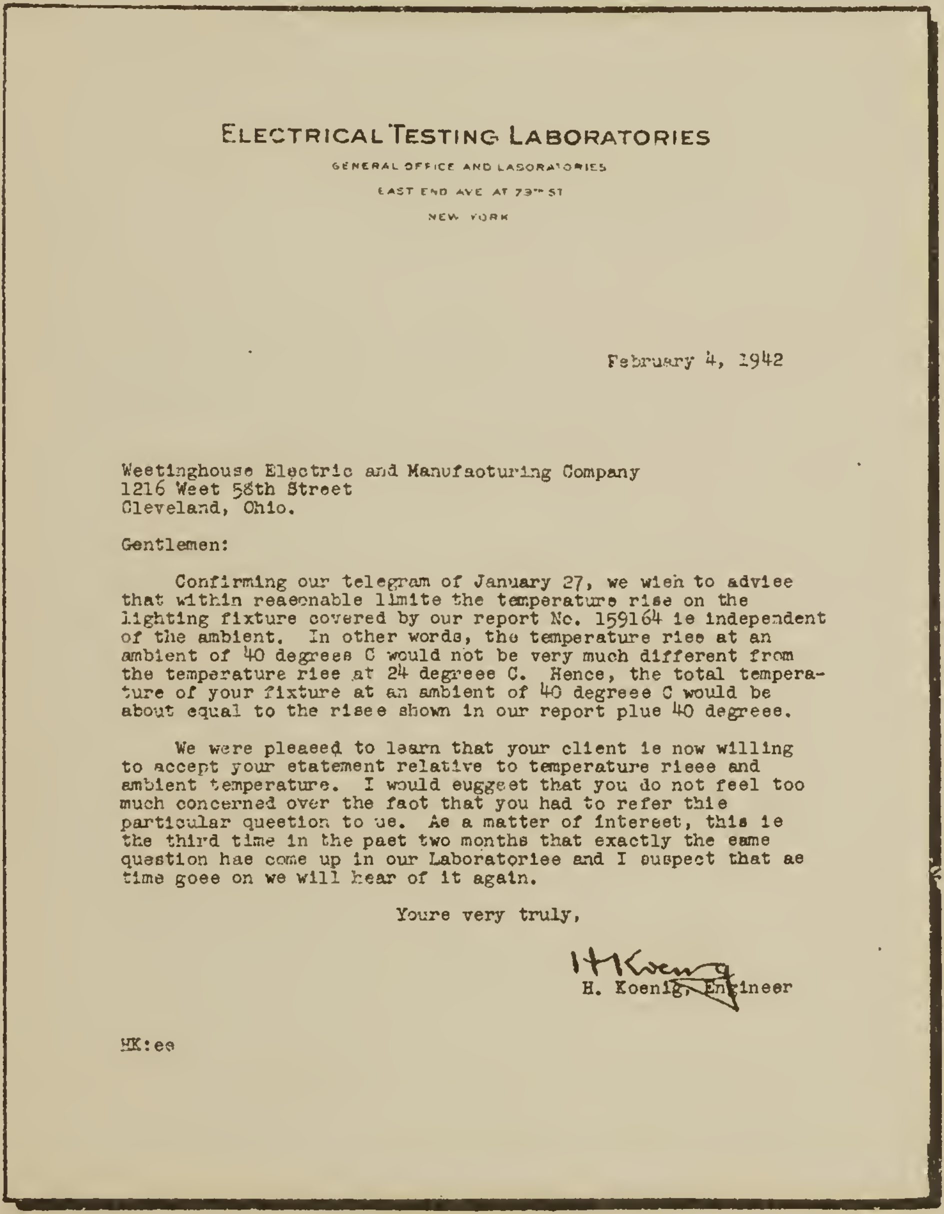
The Type DT and FDT dust-tight luminaires illustrated and described in attached catalogue sections, meet both requirements A and B and therefore are perfectly acceptable by the Ordnance Office, of the War Department.

Requirement A - There has been some misunderstanding by various engineers in the field as to the exact method of computing the 109° C from temperature rise data given for a particular luminaire. This 109° C is total temperature and includes an allowed 82°C rise plus the 27°C which is considered as normal ambient (room) temperature.

Requirement B - The Westinghouse Type DT filament lamp dust-tight units and the type FDT fluorescent units are approved by Underwriters Laboratories, Inc. for use in Hazardous Locations Class II Group G. Evidence of this approval is shown by guide cards illustrated on page 7.

The attached Electrical Testing Laboratories temperature report on the Westinghouse 150-200 watt dust-tight unit shows that the maximum total temperature with a 200 watt lamp is 83° C at point 2 with a 24°C ambient. Therefore, the temperature rise is 59°C. On the basis of 27°C ambient, the total temperature would be $\overline{86^\circ C}$ (59°C + 27°C) which is well within the maximum allowed.

If the ambient for a certain territory was 40°C, the total temperatur would be 40 + 59 or 99°C, which is still within the allowed 109°C. This method of adding the two temperatures to obtain the total temperature is verified by the ETL letter of February 5, 1942 (copy shown below).



ELECTRICAL TESTING LABORATORIES
GENERAL OFFICE AND LABORATORIES
EAST END AVE AT 79TH ST
NEW YORK

February 4, 1942

Westinghouse Electric and Manufacturing Company
1216 West 58th Street
Cleveland, Ohio.

Gentlemen:

Confirming our telegram of January 27, we wish to advise that within reasonable limits the temperature rise on the lighting fixture covered by our report No. 159164 is independent of the ambient. In other words, the temperature rise at an ambient of 40 degrees C would not be very much different from the temperature rise at 24 degrees C. Hence, the total temperature of your fixture at an ambient of 40 degrees C would be about equal to the rises shown in our report plus 40 degrees.

We were pleased to learn that your client is now willing to accept your statement relative to temperature rises and ambient temperature. I would suggest that you do not feel too much concerned over the fact that you had to refer this particular question to us. As a matter of interest, this is the third time in the past two months that exactly the same question has come up in our Laboratories and I suspect that as time goes on we will hear of it again.

Yours very truly,

H Koenig
H. Koenig, Engineer

HK:es

WESTINGHOUSE LUMINAIRES APPLICABLE TO LOCATIONS WHERE CORROSIVE OR MOISTURE VAPORS EXIST

Atmospheres that contain non-combustible vapors, such as corrosive vapors, or moisture, should be equipped with luminaires approved as being Vapor-tight.

Standard Westinghouse luminaires approved as vapor-tight by Underwriters' Laboratories, Inc., include the complete line of Vapor-tight Units with Dome, Concentric, Deep Bowl or Angle Reflectors; Millite and Industrial Concentrators. According to National Electric Code standards, this type of luminaire shall be installed in damp or wet locations, or where luminaires will be exposed to corrosive vapors.

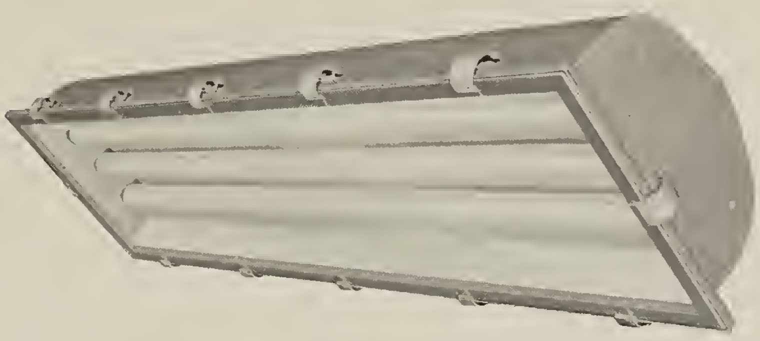
RECOMMENDED APPLICATIONS

VAPOR-TIGHT LUMINAIRES

1. Plating room or areas
2. Service station wash areas
3. Railroad roundhouse or repair shops
4. Damp basements, pits, or tunnels
5. Shower rooms, bath houses
6. Breweries
7. Ice plants
8. Meat packing and cold storage plants
9. Canneries
10. Dairies
11. Chemical plants - some parts
12. Airplane hangars
13. Dye rooms
14. Paint shops - consult local inspector
15. Soap Manufacturing - some parts of plant
16. Rayon Manufacturing - some parts of plant
17. Paper mills
18. Alkali plants
19. Sand and gravel plants

DUST-TIGHT FLUORESCENT LAMP LUMINAIRES

TYPES 2 FDT-40 AND 3 FDT-40



Application

Westinghouse Type FDT Fluorescent Luminaires meet all the requirements of the Underwriters' Laboratories, Inc. for Class II Group G, III and IV locations.

Class II Group G locations are those in which combustible dust is or is likely to be thrown or collected, such as flour and feed mills, grain elevators, starch and sugar mills.

Class III locations are those in which easily ignitible fabrics or material producing combustible flyings are handled, manufactured or used and are hazardous by being ignited, such as some parts of cotton and textile mills, cotton gins, cotton feed mills and wood-working plants.

Class IV locations are those in which easily ignitible fabrics are stored or handled and are hazardous if ignited, such as warehouses for cotton, cotton linters and wastes, sisal, henequen, ixtle, jute, hemp, tow, cocoa fibre, oakum, baled waste, kapok, Spanish moss, excelsior, etc.

Construction

The unit consists essentially of a steel housing, a dust-tight hinged cover, a white enameled reflector, lamp holders and auxiliary equipment. The unit is supplied for two, or three, 40-watt Mazda F lamps, as specified.

Housing is fabricated from sheet steel with ends butt-welded to form a continuous tight and smooth joint. A continuous flange is formed at the bottom of the housing to accommodate the cover. A heavy one-piece asbestos gasket seats in this flange and is held in place by special spot-welded mechanical fasteners.

Reflector is formed from sheet steel and has two coats of baked-on white enamel.

Lamp holders are the twist-turn type and are mounted rigidly on a lamp holder bracket.

Ballasts for two-lamp units are the two-lamp lead-lag type with internal compensator and power factor of 95%.

Single-lamp ballasts are used in conjunction with the two-lamp ballast in three-lamp luminaires and have a minimum power factor of 92%.

All ballasts are 110-125 or 220-250 volts, 60 cycles, a-c., as specified.

Wiring—Luminaires are completely assembled and wired with No. 18 stranded cable with Type CF insulation.

Approval—The complete luminaire is approved by Underwriters' Laboratories, Inc., for Class II Group G and Class III and Class IV hazardous locations.

COMPLETE UNITS—WIRED—60-CYCLE

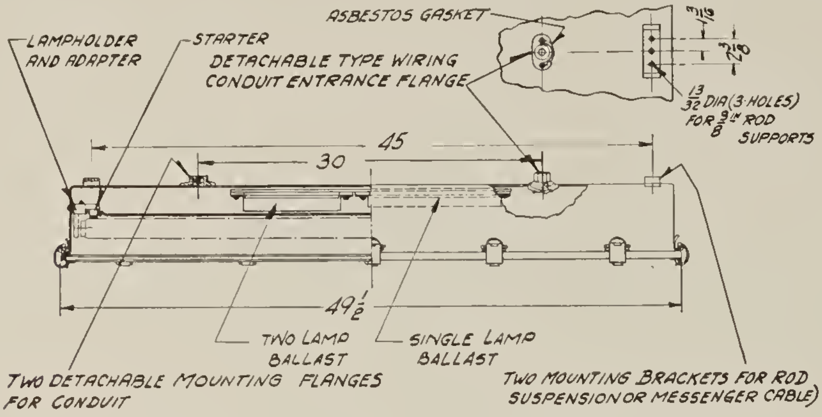
Luminaire Type	Lamps		Circuit Volts	Style No.	Price	Standard Package	
	Watts	Number				Qty.	Wt., Lbs.
2FDT-40	40	2	110-125	1 217 892	$46 60	1	46
2FDT-40	40	2	220-250	1 217 893	46 60	1	46
3FDT-40	40	3	110-125	1 217 894	54 00	1	51
3FDT-40	40	3	220-250	1 217 895	52 60	1	51

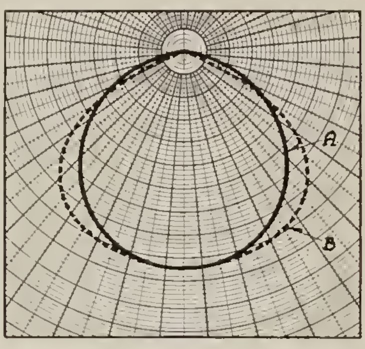
Prices are subject to change without notice.

Order by Style Number

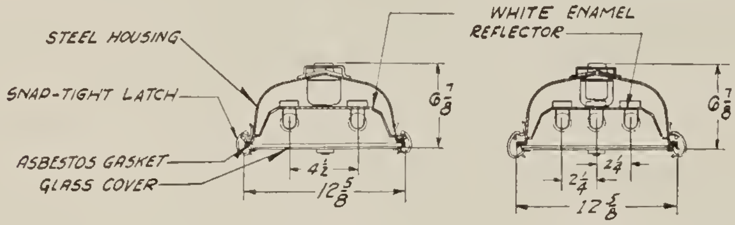
STANDARD LINE EQUIPMENT

E58, AJ4-28, C4-39, 42, 43, 44 and 47.


ASBESTOS GASKET
LAMPHOLDER AND ADAPTER
STARTER
DETACHABLE TYPE WIRING CONDUIT ENTRANCE FLANGE
3/16
2 3/8
13/32 DIA (3 HOLES) FOR 3/8 IN ROD SUPPORTS
45
30
49 1/2
TWO LAMP BALLAST
SINGLE LAMP BALLAST
TWO DETACHABLE MOUNTING FLANGES FOR CONDUIT
TWO MOUNTING BRACKETS FOR ROD SUSPENSION OR MESSENGER CABLE



A. Distribution Curve Parallel to Lamp.
B. Distribution Curve Normal to Lamp.
Distribution Curve



SECTION
TYPE 2FDT-40

SECTION
TYPE 3FDT-40

INSTALLATION DESIGN DATA FOR FDT-40 FLUORESCENT LUMINAIRES

Minimum Mtg. Ht. Above Floor (Feet)	Maximum Spacing (Feet)	Area Per Outlet (Square Feet)	(1) Room Proportions	(2) Average Footcandles on Working Plane (3' Above Floor) with White Lamps	
				2FDT-40	3FDT-40
8	7 x 7	49	Favorable Average Unfavorable	38 32 25	52 44 35
8½	8 x 8	64	Favorable Average Unfavorable	29 24 19	39 34 27
9	9 x 9	81	Favorable Average Unfavorable	23 19 15	31 26 21
10	10 x 10	100	Favorable Average Unfavorable	18 16 12	25 21 17
11	11 x 11	121	Favorable Average Unfavorable	15 13 10	21 18 14
12	12 x 12	144	Favorable Average Unfavorable	13 11 8.5	17 15 12

1. **Room Proportions**—Use **Favorable** when room width equals four or more times **mounting height.**
   Use **Average** when room width equals twice the **mounting height.**
   Use **Unfavorable** when room width equals **mounting height.**
2. These footcandle values include a normal depreciation of 20%, which allows 12% for average lamp depreciation and 8% for average dust accumulation. They are also based upon a wall reflectivity of 50-60% and a ceiling reflectivity of at least 75%. These values will not prevail unless luminaires are frequently cleaned.

TYPE DT DUST-TIGHT INCANDESCENT LUMINAIRES

Application

Westinghouse Type DT Incandescent Luminaires meet all the requirements of the Underwriters' Laboratories, Inc., for Classes II Group G, III and IV locations.

Class II Group G locations are those in which combustible dust is thrown or is likely to be thrown or collected, such as flour and feed mills, grain elevators, starch and sugar mills.

Class III locations are those in which easily ignitible fabrics or material producing combustible flyings are handled, manufactured or used and are hazardous by being ignited, such as some parts of cotton and textile mills, cotton gins, cotton feed mills and wood-working plants.

Class IV locations are those in which easily ignitible fabrics are stored or handled and are hazardous by being ignited, such as warehouses for cotton, cotton linters and wastes, sisal, henequen, ixtle, jute, hemp, tow, cocoa fibre, oakum, baled waste, kapok, Spanish moss, excelsior, etc.

Construction

The complete unit consists of a cast socket hood, heavy duty clear glass globe, and a porcelain enameled dome shaped steel reflector. The luminaire is available in two sizes, for 100-watt and 150 or 200-watt incandescent lamps.

Hood is cast in one piece from high quality gray iron. It is tapped for ½ or ¾ inch conduit, as specified and has a ¼—20 square head steel set screw for locking to the conduit. The lower skirt of the hood has internal machined threads for the threaded globe and a flat flange for reflector mounting. Two bosses are cast in the hood to properly position the lamp holder. The hood is finished inside and outside with a rust-resisting enamel.

Dome reflector is drawn from enameling grade sheet iron. The reflector is porcelain enameled as follows: one ground coat all over, two white coats inside, and one green coat outside with a black bead. Enameled surface is acid-resisting. The reflector is securely attached to the hood by three screws. (A reflector protecting ring and padded metal washers are inserted between the reflector and the hood flange to protect the reflector against chipping.)

Globe is of heavy clear glass of ample size to keep the temperature below maximum allowable limits. It screws into the hood and seats tight against a thick high pressure wired asbestos gasket.

Lampholder is a heavy duty porcelain socket. Terminal screws are easily accessible from the front by removing porcelain screw shell collar.

Approval—The units are approved by the Underwriters' Laboratories, Inc., for application in Class II Group G and Class III and IV hazardous locations and are so identified.

COMPLETE UNITS

Lamp Wattage	Style No.	List Price	Standard Package	
			Quantity	Wt., Lb.
DOME—COMPLETE UNIT				
100	1 122 971	$11 50	10	88
150–200	1 122 972	16 50	5	75
CONCENTRIC—COMPLETE UNIT				
100	1 122 973	11 50	10	80
150–200	1 122 974	15 40	5	70
DEEP BOWL—COMPLETE UNIT				
100	1 122 975	11 90	10	83
150–200	1 122 976	14 40	5	82
ANGLE—COMPLETE UNIT				
100	1 122 977	12 00	10	83
150–200	1 122 978	14 40	5	74

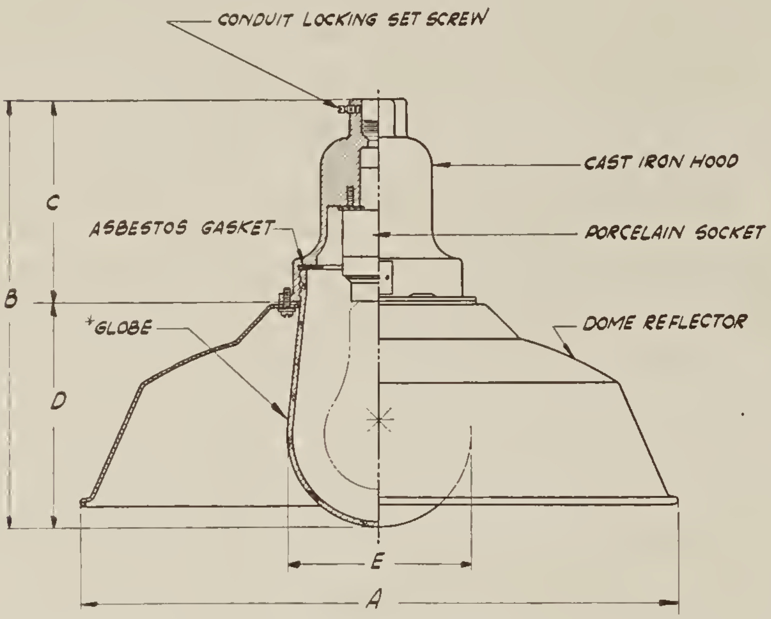
Prices are subject to change without notice.

Order by Style Number

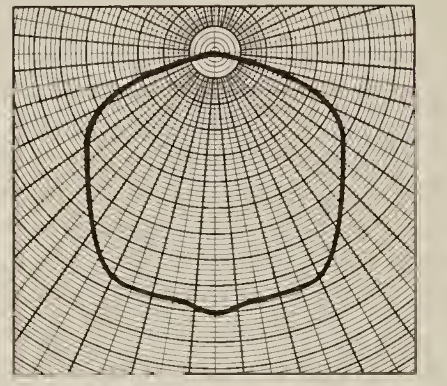
STANDARD LINE EQUIPMENT

E5-8, 41, AJ4-28, 32,
C4-39, 42, 43, 44, 47.

TYPE DT DUST-TIGHT INCANDESCENT LUMINAIRES—Continued



CONSTRUCTION OUTLINE OF TYPE DT DUST-TIGHT INCANDESCENT LUMINAIRES.



DISTRIBUTION CURVE.

Style No.	Dimensions in Inches				
	A	B	C	D	E
1 122 971	14	11⅝	5½	6⅛	5
1 122 972	18	14¾	6⅞	7⅞	8⅜
1 122 973	14	11⅝	5½	6⅛	5
1 122 974	18	14¾	6⅞	7⅞	8⅜
1 122 975	10⅝	11⅝	5½	6⅛	5
1 122 976	16 9/16	14¾	6⅞	7⅞	8⅜
1 122 977	10⅜	13¼*	5½	7¾*	5
1 122 978	14	17½*	6⅞	10⅝*	8⅜

* Measured from bottom edge of reflector instead of tip of globe.

INSTALLATION DESIGN DATA FOR DT UNITS WITH DOME REFLECTORS (1)

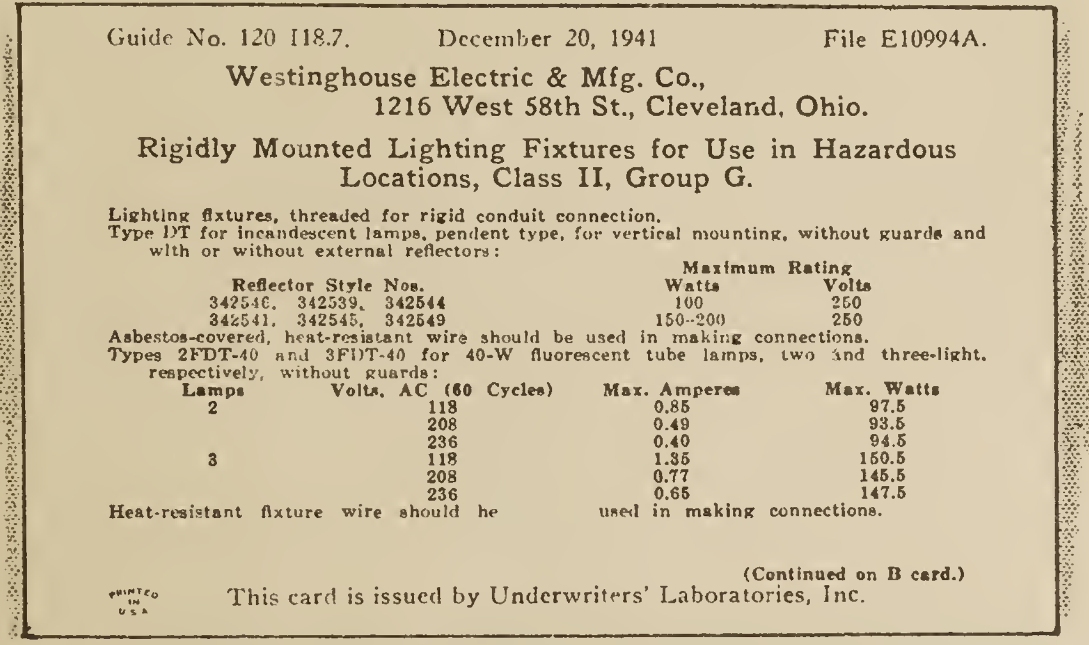
Mounting Height (Feet)	Maximum Spacing (Feet)	Area Per Outlet (Sq. Ft.)	(2) Room Proportions	Average Footcandles on Working Plane (3′ above floor) With Inside Frosted Lamps		
				100 Watt	150 Watt	200 Watt
8	8 x 8	64	Favorable	11	17	25
			Average	8.8	14	20
			Unfavorable	7.0	11	16
8½	9 x 9	81	Favorable	8.5	14	20
			Average	7.0	11	16
			Unfavorable	5.5	9.0	13
9	10 x 10	100	Favorable	7.0	11	16
			Average	5.6	9.0	13
			Unfavorable	4.5	7.3	10
10	11 x 11	121	Favorable	5.7	9.0	13
			Average	4.6	7.5	11
			Unfavorable	3.7	6.0	9
10½	12 x 12	144	Favorable	4.8	8.0	11
			Average	3.9	6.3	9.0
			Unfavorable	3.1	5.0	7.2
12	14 x 14	196	Favorable		5.7	8.1
			Average		4.7	6.5
			Unfavorable		3.7	5.3
13	16 x 16	256	Favorable		4.5	6.2
			Average		3.6	5.0
			Unfavorable		3.0	4.0
14½	18 x 18	324	Favorable			5.0
			Average			4.0
			Unfavorable			3.2

1. When designing a layout for deep bowl reflectors, use same mounting height and spacing relations as given above and multiply footcandle values by .90.
2. Room Proportions—Use **Favorable** when room width equals four or more times **mounting height.**
   Use **Average** when room width equals twice the **mounting height.**
   Use **Unfavorable** when room width equals **mounting height.**
3. These footcandle values include a normal depreciation of 25%, which allows 12% for average lamp depreciation and 13% for average dust accumulation. They are also based upon a wall reflectivity of 50-60% and a ceiling reflectivity of at least 75%. These values will not prevail unless luminaires are frequently cleaned.

UNDERWRITERS' LABORATORIES APPROVAL

Lighting fixtures approved by Underwriters' Laboratories, Incorporated, are listed as such by one of two methods, Label Service or Re-examination Service. To equipment which is approved under label service, an Underwriters' approval label is affixed to each luminaire at the factory. A list of the equipment so approved is found in the Underwriters' publication, "List of Inspected Electrical Equipment". Every inspector who has authority to enforce the National Electrical Code, will have an up-to-date copy of this List.

Equipment approved under Re-examination Service is also listed in the "List of Inspected Electrical Equipment". This equipment may or may not carry approval identification on the piece. In addition to the book listing, Re-examination approvals are also shown on Guide Cards. These are kept on file by inspectors authorized to enforce the National Electric Code. Reproductions of the cards covering the FDT-40 and DT dust-tight units are shown below. Anyone may obtain extra copies of these cards from the Underwriters' Laboratories, Incorporated, Chicago, Illinois.



Guide No. 120 I18.7. December 20, 1941 File E10994A.

Westinghouse Electric & Mfg. Co.,
1216 West 58th St., Cleveland, Ohio.

Rigidly Mounted Lighting Fixtures for Use in Hazardous Locations, Class II, Group G.

Lighting fixtures, threaded for rigid conduit connection.

Type DT for incandescent lamps, pendent type, for vertical mounting, without guards and with or without external reflectors:

Reflector Style Nos.	Maximum Rating Watts	Maximum Rating Volts
342546, 342539, 342544	100	250
342541, 342545, 342549	150--200	250

Asbestos-covered, heat-resistant wire should be used in making connections.

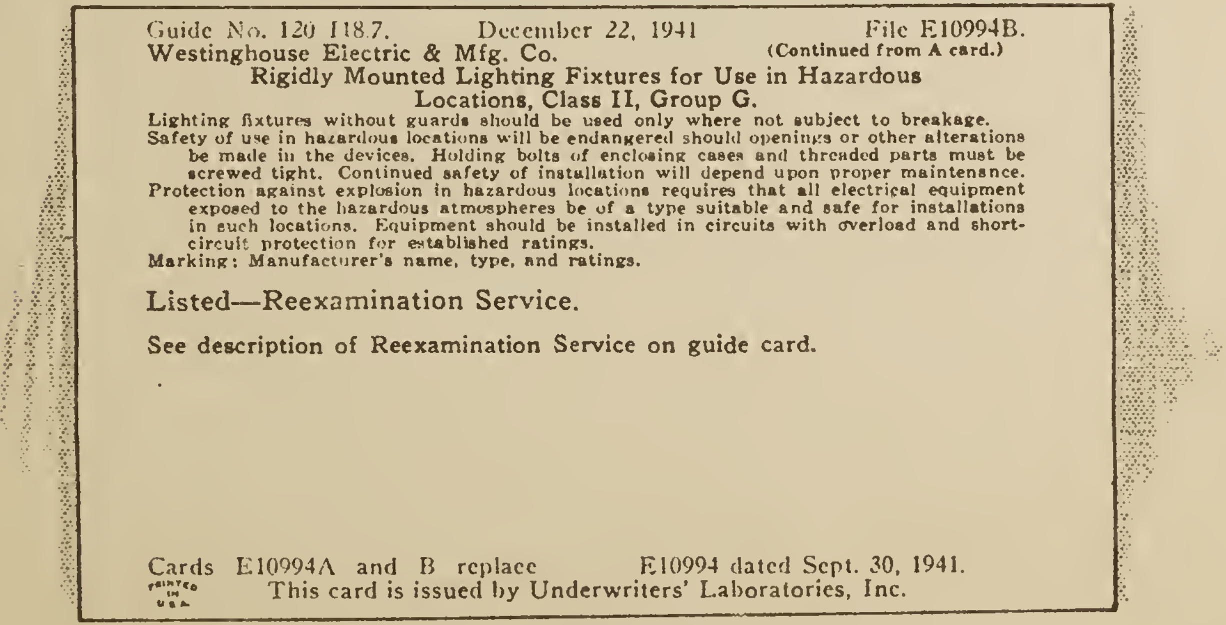
Types 2FDT-40 and 3FDT-40 for 40-W fluorescent tube lamps, two and three-light, respectively, without guards:

Lamps	Volts, AC (60 Cycles)	Max. Amperes	Max. Watts
2	118	0.85	97.5
	208	0.49	93.5
	236	0.40	94.5
3	118	1.35	150.5
	208	0.77	145.5
	236	0.65	147.5

Heat-resistant fixture wire should be used in making connections.

(Continued on B card.)

PRINTED IN U.S.A. This card is issued by Underwriters' Laboratories, Inc.



Guide No. 120 I18.7. December 22, 1941 File E10994B.

Westinghouse Electric & Mfg. Co. (Continued from A card.)

Rigidly Mounted Lighting Fixtures for Use in Hazardous Locations, Class II, Group G.

Lighting fixtures without guards should be used only where not subject to breakage.

Safety of use in hazardous locations will be endangered should openings or other alterations be made in the devices. Holding bolts of enclosing cases and threaded parts must be screwed tight. Continued safety of installation will depend upon proper maintenance.

Protection against explosion in hazardous locations requires that all electrical equipment exposed to the hazardous atmospheres be of a type suitable and safe for installations in such locations. Equipment should be installed in circuits with overload and short-circuit protection for established ratings.

Marking: Manufacturer's name, type, and ratings.

Listed—Reexamination Service.

See description of Reexamination Service on guide card.

Cards E10994A and B replace E10994 dated Sept. 30, 1941.

PRINTED IN U.S.A. This card is issued by Underwriters' Laboratories, Inc.

REPORT NO. 159164

TEMPERATURE TESTS OF DUST-TIGHT LIGHTING UNIT

Rendered to

Westinghouse Electric and Manufacturing Co.

ELECTRICAL TESTING LABORATORIES
GENERAL OFFICE AND LABORATORIES
EAST END AVE. AT 79TH ST.
NEW YORK

ELECTRICAL TESTING LABORATORIES
GENERAL OFFICE AND LABORATORIES
EAST END AVE. AT 79TH ST.
NEW YORK

* * *

REPORT NO. 159164

TEMPERATURE TESTS OF DUST-TIGHT LIGHTING UNIT

Rendered to Westinghouse Electric and Manufacturing Company

Order No. 82861-X

* * *

General

This report gives the results of temperature tests of one dust-tight lighting unit submitted by the client. Two sets of measurements were made, one using a 150-watt inside frost lamp and another using a 200-watt inside frost lamp. The tests were authorized by Purchase Order No. 41989 and in a letter dated December 22, 1941 and signed by Mr. F. C. Winkler.

Description of Unit

The complete unit is designated by the client as S#1122972. The respective parts are identified as Reflector S#342541, Globe S#336425, and Hood S#1217002. The unit consists of a standard-base porcelain socket mounted in a metal hood. The reflector is held against the bottom of the hood by three equally-spaced bolts. A clear-glass globe fits over the lamp. The globe is threaded and screws into the bottom of the hood. An asbestos gasket is provided to make the unit dust-tight.

Description of Unit (Cont'd.)

The principal dimensions are approximately as follows:

Overall height, inches	12-1/4
Length of hood, inches	6-1/2
Depth of reflector, inches	5-7/8
Diameter of glass globe, inches	8
Overall diameter, inches	18

Tests and Test Methods

The purpose of the tests was to determine the highest temperatures reached at various points on the surface of the unit when it was used with a 150-watt and a 200-watt lamp, respectively.

The unit was connected with a 2-foot length of 1/2 inch conduit and mounted in a vertical position with the lamp down. No. 14 insulated wire was used for making the connections. An exploring thermocouple was used to determine the hottest spot in various parts of the unit in order to locate thermocouple positions. Thermocouples of No. 28 Awg copper-constantan wire were fastened to the various positions with water-glass, about five inches of wire being in contact with the surface. The location of the thermocouple junctions were as follows:

1. On the bottom of the globe.
2. On the side of the globe opposite the lamp filament.
3. On the reflector one inch above the rim.
4. At the mid-section of the reflector.
5. At the top of the reflector.
6. On the flat section at the bottom of the hood.
7. On the rounded transition surface of the hood.
8. On the side of the hood, 2-inches down.
9. On the hood top (excluding the hexagonal fitting)
10. On the top of the hexagonal fitting on the hood top.

Tests were made with a 150-watt inside frost lamp in the socket and again with a 200-watt inside frost lamp in the socket. In each case the lamp was operated from a 60-cycle supply and the voltage

Tests and Test Methods (Cont'd.)

was adjusted to give exactly 150-watts and 200-watts respectively. After the lamps were lighted, temperatures were read at intervals until three successive readings showed thermal equilibrium had been reached.

Results of Tests

The final temperatures at each point and the temperature rise above ambient are given in the following table:

Temperatures of Dust-Tight Lighting Unit

	Temperature, C		Temperature Rise, C	
Location*	150 Watts	200 Watts	150 Watts	200 Watts
1	51.0	58.0	27.0	34.0
2	70.5	83.0	46.5	59.0
3	37.0	39.5	13.0	15.5
4	43.5	47.0	19.5	23.0
5	63.5	67.5	39.5	43.5
6	72.0	76.5	48.5	52.5
7	74.5	77.0	50.5	53.0
8	66.5	69.0	42.5	45.0
9	65.5	68.0	41.5	44.0
10	63.0	65.5	39.0	41.5
Ambient	24.0	24.0	-	-

*See Page 2; Test and Test Methods.

Approved by:

Engineer,
Electrical Laboratory

William C. Thompson
In Charge of Test.

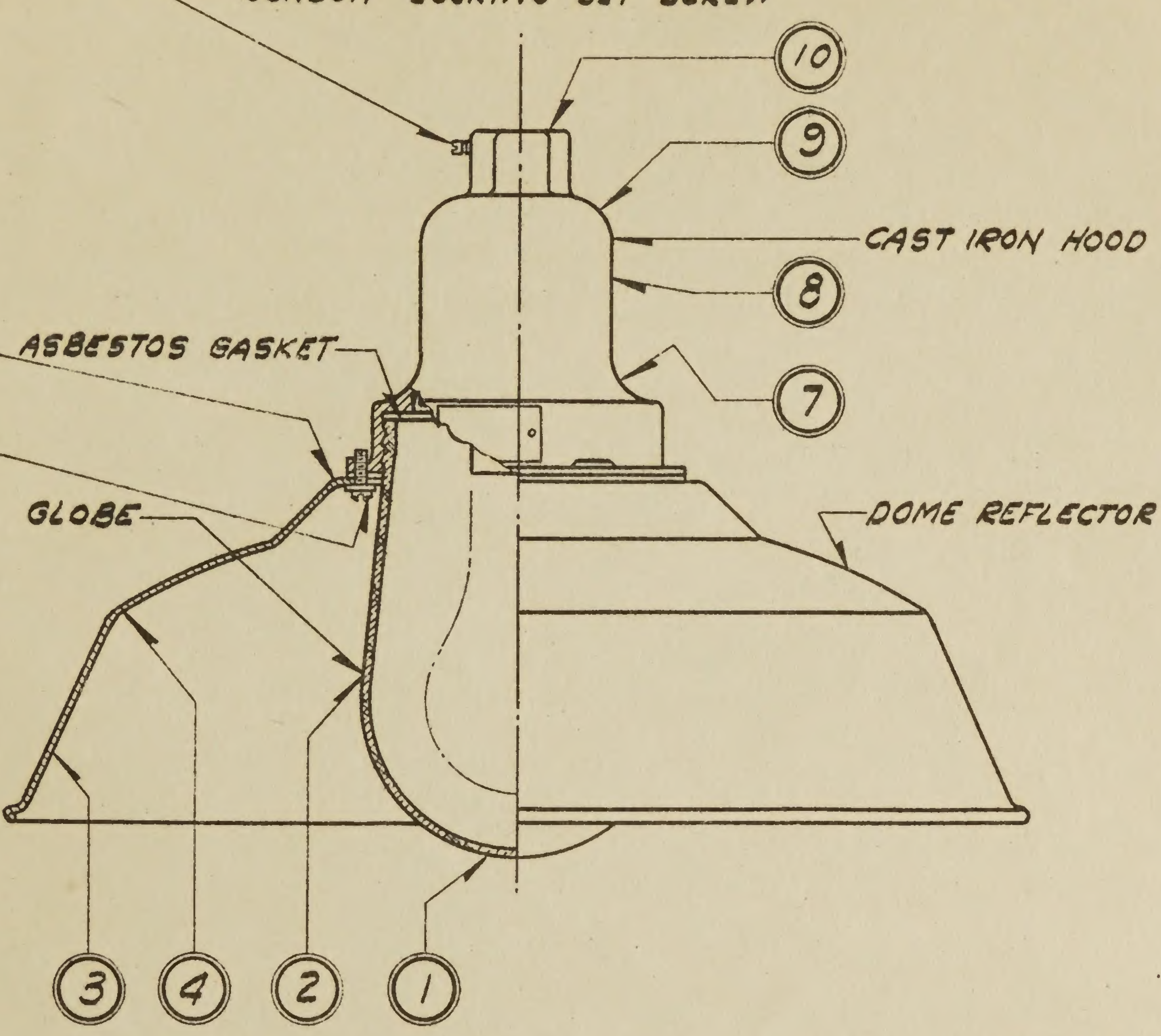
Date of Tests: December 30-31, 1941.

Copied by: rmm
Checked by:
January 12, 1941.

WESTINGHOUSE ELECTRIC & MFG. CO., CLEVELAND WORKS, CLEVELAND, OHIO, U. S. A.

LOCATIONS OF TEMPERATURE READINGS

DUST-TIGHT LUMINAIRE



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